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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,624	06/15/2001	Ian Wylie	WYLIE 5	8470
47396	7590	03/03/2005	EXAMINER KIELIN, ERIK J	
HITT GAINES, PC AGERE SYSTEMS INC. PO BOX 832570 RICHARDSON, TX 75083			ART UNIT 2813	

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/882,624	WYLIE, IAN	
	Examiner	Art Unit	
	Erik Kielin	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) none is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This action responds to the Amendment filed 13 December 2004.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-6, 12-16, 17-20, 21-26, and 27-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the trench" in line 8. There is insufficient antecedent basis for this limitation in the claim. The remaining claims 2-6 are rejected for depending from the above rejected claim.

Claim 12 recites the limitation "the trench" in line 6. There is insufficient antecedent basis for this limitation in the claim. The remaining claims 13-16 are rejected for depending from the above rejected claim.

Claims 17, 21 and 27 requires "an isolation region...**within** a trench" but then requires the isolation region to be composed of "a first portion formed **in** the trench and a second post portion formed **over** the trench" (emphasis added). It is unclear how the isolation region can be required to be in the trench while simultaneously over the trench. The remaining claims 18-20, 22-26, and 28-32 are rejected for depending from the above rejected claim. For the purposes of patentability, the claims 18-20, 22-26, and 28-32 will be interpreted as best understood.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims **1-5**, **7-10**, **12-14**, **16**, **17-19**, and **21-25** are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,043,778 (**Teng et al.**).

Regarding claims **1**, **7**, **12**, **17**, and **21**, **Teng** discloses a semiconductor device comprising,

a semiconductor substrate **10** having N- and P-wells **14**, **16** (Fig. 7);

a gate **24** above each well in the semiconductor substrate, the gate having gate sidewall spacers **42** located along sidewalls thereof (Fig. 7);

a channel region **33** (Fig. 5A; col. 9, line 4);

a trench (**32** and that portion holding the part of the isolation region **20**) adjacent the channel region **33** (Fig. 3; col. 8, lines 53-58);

an isolation region **20** comprising an oxide (col. 7, line 21) --as further limited by instant claims 4, 9, 13, 18, and 24-- and formed adjacent the semiconductor substrate --as further limited by instant claims 2 and 22-- the isolation region including a first portion formed in the trench and a second post portion (shown as the narrower portion at the top of **20**, but not labeled) formed over the trench (see Fig. 4 wherein a portion of the isolation region labeled "OXIDE" is formed in a separate trench from the narrower post portion, shown in Fig. 7) in which the first portion is formed, wherein no structural interface exists between the first and second

portions of the isolation region, wherein the isolation region does not extend under the channel region **33** --as further limited by instant claims 3, 8, and 23 -- and wherein the isolation is between the transistors indicated by the gates **24** and thereby isolates the transistors --as further limited by instant claim 16; and

a first portion of a source/drain region **44** formed in the semiconductor substrate, and a second portion of the source/drain region **36** formed on the isolation region from polysilicon (col. 8, lines 57-58) --as further limited by instant claims 5, 10, 14, 19, and 25-- and in contact with the second post portion but not in the semiconductor substrate.

NOTE: There exists no limitation in the claims, as presently written, excluding the formation of the second post portion of the isolation region in some other trench from that trench in which the first portion of the isolation region is formed. The “trench” in which the first portion is formed can be arbitrarily defined as there exists no limitation in the instant claims delineating the extent of the trench. In particular, as noted above in the rejection of the claims under 35 USC 112(2), with respect to independent claims 17, 21 and 27, both the first and second portions is the isolation region must be simultaneously “within the trench” and “over the trench.” Applicant **may** overcome the prior art rejection by more clearly claiming the trench.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6, 11, 15, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Teng** in view of US Patent Application 2002/0142552 A1 (**Wu**).

The prior art of **Teng**, as explained above, discloses each of the claimed features except for forming the isolation region to extend through a transistor tub ("well").

Wu teaches each of the features of the independent claims except for the second portion contacting the post portion 114a of the isolation. Note that the isolation region extends through the tubs/wells.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to use form the isolation of **Teng** to extend through a tub/well, as taught by **Wu** in order to form a more thorough isolation between devices as shown in **Wu**.

7. Claims 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Teng** in view of Applicant's admitted prior art (**APA**).

Teng, as explained above, discloses all of the features of the instant invention except for specifically showing the interconnect and other active and passive devices.

Applicant indicates that Fig. 12 shows a conventional integrated circuit (paragraph [0022]) with interconnect 1220 and other active and passive devices and that one of ordinary skill is familiar with these additional elements (paragraph [0044]).

It would have been obvious to one of ordinary skill at the time of the invention to modify **Teng** to include known interconnect and active and passive device in order to form a functioning circuit, such as a DRAM, because it highly desired in the art to form whole integrated circuits rather than just parts which would, in isolation, be useless.

8. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Teng** in view of **APA**, as applied to claim 27 above, and further in view of US Patent Application 2002/0142552 A1 (**Wu**).

The prior art of **Teng**, as explained above, discloses each of the claimed features except for forming the isolation region to extend through a transistor tub (“well”).

Wu teaches the features as noted above.

It would have been obvious for one of ordinary skill in the art, at the time of the invention to use form the isolation of **Teng** to extend through a tub/well, as taught by **Wu** in order to form a more thorough isolation between devices as shown in **Wu**.

Response to Arguments

9. Applicant's arguments filed 13 December 2004 have been fully considered but they are not persuasive.

Notwithstanding the indefinite claims 17-32 requiring the isolation region to be “within the trench” while at the same time being “over the trench”, Applicant's argument that **Teng** fails to disclose the feature of the first post portion in the trench with the second portion over the trench is not persuasive for reasons indicated in the rejection of the claims over **Teng**. Again, there exists no limitations on the extent of the trench holding the first portion of the isolation region. Moreover, Fig. 4 of **Teng** very clearly shows only a first portion in the trench, while a second post portion is formed over the trench. The second post portion is taken to be formed in a separate trench in Fig. 7, showing a later stage of production from that shown in Fig. 4.

Applicant's arguments regarding the **process of formation** of the isolation region within the trench are noted but are moot since process steps fail to have patentable weight in claims drawn to a device, absent **evidence** that there exists structural differences implied by the method. Finally it is noted that MPEP 2145 states that "argument does not replace evidence where evidence is necessary."

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erik Kielin whose telephone number is 571-272-1693. The examiner can normally be reached from 9:00 - 19:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on 571-272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Erik Kielin
Primary Examiner
March 1, 2005